

## WHAT IS CLAIMED IS:

1. A self-cooled gas insulation transformer comprising an apparatus including an iron core and a coil that is wound around said iron core, a tank to receive said apparatus therein and an inert gas that is filled in said tank as an insulating and cooling medium, wherein a global warming coefficient of said inert gas is rated 1 or below.
2. A self-cooled gas insulation transformer comprising an apparatus including an iron core and a coil that is wound around said iron core, a tank to receive said apparatus therein and an inert gas that is filled in said tank as an insulating and cooling medium, wherein a molecular weight of said inert gas is less than 146.
3. A self-cooled gas insulation transformer comprising an apparatus including an iron core and a coil that is wound around said iron core, a tank to receive said apparatus therein and a gas that is filled in said tank as an insulating and cooling medium, wherein said gas is selected from one of nitrogen gas, carbon dioxide gas, dried air and a mixed gas thereof.
4. A self-cooled gas insulation transformer comprising an apparatus including an iron core and a coil that is wound around said iron core, a tank to receive said apparatus therein and a gas that is filled in said tank as an insulating and cooling medium, wherein said iron core and coil are possessed with a loss characteristics of a high-efficient transformer and said

gas is an inert gas, a global warming coefficient of which gas is rated 1 or below.

5     5. A self-cooled gas insulation transformer according to claim 4 wherein said iron core is made from an amorphous metallic thin band.

10     6. A self-cooled gas insulation transformer comprising an apparatus including an iron core and a coil that is wound around said iron core, a tank to receive said apparatus therein and a gas that is filled in said tank as an insulating and cooling medium, wherein said gas is selected from one of nitrogen gas, carbon dioxide gas, dried air and a mixed gas thereof and said iron core is made from one of a magnetic domain control silicone steel, a silicone steel of high orientation and an amorphous alloy.

15     7. A self-cooled gas insulation transformer in any one of claims 1 to 6, wherein said gas is applied pressure at less than 0.2975 Mpa (2kg/cm<sup>2</sup>G) to be sealed in said tank.

20     8. A self-cooled gas insulation transformer as in any one of claims 1 to 6 wherein said gas is applied pressure at 150.358 kPa or below so as to be sealed in said tank.

25     9. A self-cooled gas insulation transformer comprising an apparatus wherein a coil is wound around an iron core made from an amorphous alloy, a tank to receive said apparatus therein and nitrogen gas that is sealed in said tank as an insulating and cooling medium.

10. A self-cooled gas insulation transformer according to claim 9 wherein said nitrogen gas is applied pressure at 150.358 kPa or below so as to be sealed in said tank.